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Pulpwood Production in the North-Central Region by County, 1981

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HIGHLIGHTS

Lake States

Lake States pulpwood production dropped to 5.60 million cords in 1981. Loggers cut record volumes of aspen, red pine, white pine, yellow birch, balsam poplar, and white oak. Production was at a modern-day low for spruce and hemlock. Whole tree chips comprised 8 percent of total production; Michigan remained the leading producer.

A decline of 7 percent in Michigan production was nearly offset by a 3 percent gain in Minnesota and a 1 percent gain in Wisconsin. Pine and spruce harvests in Minnesota were the lowest since World War II.

Another waferboard plant and the first oriented strand board plant began operating in 1981. Annual production capacity at particleboard and structural board plants rose to 520 million square feet.

Central States

Pulpwood production was 428,000 cords. Exports from the Central States increased, setting another record. Fifty-eight percent of the pulpwood produced was exported.

Pulpwood receipts plunged 12 percent from 1980 to 194,000 cords. Receipts in Illinois were the lowest since this pulpwood series was begun.

Five mills closed in 1980 and two others closed in 1981. Some closed permanently and all produced organic (wood-based) roofing felt. Organic felts have been and are likely to continue losing market share to fiberglass felts.

CONTENTS

	Page
Lake States	1
Production	1
Receipts	4
Industry Trends and Analysis	5
Central States	6
Production	6
Receipts	8
Industry Trends and Analysis	8
Appendix	11

PULPWOOD PRODUCTION IN THE NORTH CENTRAL REGION BY COUNTY, 1981

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This is the 23rd annual report of the pulpwood harvest in Lake States counties and the 22nd annual report of the harvest in the Central States. Pulpwood constitutes more than half the timber products harvested annually in the Lake States (Michigan, Minnesota, and Wisconsin) and is an important product in the Central States (Illinois, Indiana, Iowa, and Missouri).

Current detailed pulpwood production[1] information is necessary for intelligent planning and decisionmaking in procuring wood, managing forest resources, and developing forest industries. Also, researchers need current pulpwood information to plan projects.

Since 1979, we have included logs, bolts, and wood residue used in manufacturing particleboard, waferboard, and oriented strand board in this annual series. Wood used at these plants is identical or nearly identical to wood used at pulpmills.

Because composition board plants primarily use aspen and wood residue, including them does not distort roundwood use trends for other species nor preclude comparing survey results with 1978 and previous years.

Pulpmills, particleboard plants, and waferboard plants using North Central States timber in 1981 reported their pulpwood receipts[2] by species groups and counties of origin. This report presents the results of the survey, analyzes the data where appropriate, compares results with 1980 or earlier years, and discusses trends in pulpwood production and use.

[1]*Pulpwood production, determined from mill receipts, is the annual volume of pulpwood cut in a specific county or region, plus the annual wood residue volume produced by sawmills, veneer mills, etc., in a specific State or region that was used to manufacture pulp and composition board.*

[2]*Pulpwood receipts are the volume of wood received by mills in a specific State or region, regardless of the geographic source.*

The Lake States and Central States are discussed separately because the timber types in each area are different and less information can be released about the Central States (more detailed data on pulpwood production and receipts in the Central States would reveal the operations of individual mills).

Pulpwood production in Minnesota is completely and accurately shown. However, to prevent disclosure of confidential information about softwood pulpwood use by individual companies, the total quantity of softwood pulpwood imports and exports between Minnesota and Canada are not reported. **Thus, some Minnesota softwood shipped to Canada is shown as remaining and used in Minnesota, and receipts of Canadian softwood in Minnesota are understated.**

LAKE STATES

Production

Compared to 1980, pulpwood production fell 1 percent to 5.60 million cords in 1981 (table 1). Nine out of 10 cords were roundwood (including chips from roundwood); the remainder was residue from wood-using plants.[3]

Major species cut were aspen (2,419,000 cords), jack pine (466,000 cords), and balsam fir (309,000 cords). And red pine, white birch, hard maple, and soft maple each provided more than 200,000 cords.

Pulpwood production from hardwood residue climbed to a record for the third straight year. Similarly, for the second year in a row, production from hardwood roundwood reached a record. Aspen harvesting rose 141,000 cords to surpass the peak set in

[3]*Residue is the byproduct from sawmills, veneer mills, cooperage mills, and other wood-using plants that is used for pulping. Residue includes slabs, edgings, veneer cores, sawdust, wood flour, and chips manufactured from slabs, edgings, and veneer cores.*

Table 1.-Production and imports of pulpwood, Lake States, 1981

(In standard cords, unpeeled)

Species and destination	Production by States [1]				Imports			
	Michigan	Minnesota	Wisconsin	Regional total	Other U.S. [2]	Canada	Total imports	Total receipts
Roundwood								
Cedar								
Michigan	11,304	0	0	11,304	0	0	0	11,304
Total	11,304	0	0	11,304	0	0	0	11,304
Balsam fir								
Michigan	65,892	0	906	66,798	0	0	0	66,798
Minnesota	0	71,236	0	71,236	0	0	0	71,236
Wisconsin	29,967	1,247	103,872	135,086	0	0	0	135,086
Exported [3]	7,831	28,260	0	36,091	0	0	0	0
Total	103,690	100,743	104,778	309,211	0	0	0	273,120
Hemlock								
Michigan	35,732	0	1,152	36,884	0	0	0	36,884
Wisconsin	3,093	0	27,780	30,873	0	0	0	30,873
Total	38,825	0	28,932	67,757	0	0	0	67,757
Jack pine								
Michigan	98,717	0	299	99,016	0	0	0	99,016
Minnesota	0	86,418	748	87,166	0	177	177 [4]	87,343 [5]
Wisconsin	38,880	18,834	214,949	272,663	20,312 [4]	0	20,312 [4]	292,975 [5]
Exported [3]	0	6,195	1,120	7,315	0	0	0	0
Total	137,597	111,447	217,116	466,160	20,312	177	20,489	479,334
Red pine								
Michigan	67,880	0	2,400	70,280	190	0	190	70,470
Minnesota	0	16,489	835	17,324	0	0	0	17,324
Wisconsin	9,223	7,886	177,643	194,752	0	477	477	195,229
Exported [3]	1,928	0	0	1,928	0	0	0	0
Total	79,031	24,375	180,878	284,284	190	477	667	283,023
White pine								
Michigan	17,901	0	262	18,163	0	0	0	18,163
Minnesota	0	10,928	83	11,011	0	0	0	11,011
Wisconsin	2,220	159	21,001	23,380	0	0	0	23,380
Total	20,121	11,087	21,346	52,554	0	0	0	52,554
Spruce								
Michigan	22,108	0	154	22,262	0	0	0	22,262
Minnesota	0	92,340	0	92,340	0	2,964	2,964	95,304
Wisconsin	15,269	25,090	27,184	67,543	0	18,577	18,577	86,120
Exported [3]	7,329	9,988	0	17,317	0	0	0	0
Total	44,706	127,418	27,338	199,462	0	21,541	21,541	203,686
Tamarack								
Michigan	4,332	0	50	4,382	0	0	0	4,382
Minnesota	0	5,181	0	5,181	0	0	0	5,181
Wisconsin	1,388	24,772	4,930	31,090	0	82	82	31,172
Total	5,720	29,953	4,980	40,653	0	82	82	40,735
Ash								
Michigan	9,559	0	0	9,559	0	0	0	9,559
Wisconsin	5,124	220	37,497	42,841	0	0	0	42,841
Exported [3]	0	0	80	80	0	0	0	0
Total	14,683	220	37,577	52,480	0	0	0	52,400
Aspen								
Michigan	485,709	0	254	485,963	0	0	0	485,963
Minnesota	0	693,374	31,458	724,832	0	0	0	724,832
Wisconsin	166,587	82,126	933,067	1,181,780	0	0	0	1,181,780
Exported [3]	0	25,829	370	26,199	0	0	0	0
Total	652,296	801,329	965,149	2,418,774	0	0	0	2,392,575
Balsam poplar								
Michigan	30,299	0	0	30,299	0	0	0	30,299
Minnesota	0	51,100	624	51,724	0	0	0	51,724
Exported [3]	0	580	0	580	0	0	0	0
Total	30,299	51,680	624	82,603	0	0	0	82,023
Basswood								
Michigan	18,828	0	34	18,862	0	0	0	18,862
Minnesota	0	229	0	229	0	0	0	229
Wisconsin	729	2	15,581	16,312	0	0	0	16,312
Exported [3]	0	0	149	149	0	0	0	0
Total	19,557	231	15,764	35,552	0	0	0	35,403
Beech								
Michigan	10,719	0	24	10,743	0	0	0	10,743
Wisconsin	1,790	0	22	1,812	0	0	0	1,812
Total	12,509	0	46	12,555	0	0	0	12,555
White birch								
Michigan	71,811	0	229	72,040	0	0	0	72,040
Minnesota	0	609	0	609	0	0	0	609
Wisconsin	8,308	10,384	130,310	149,002	0	0	0	149,002
Exported [3]	0	138	122	260	0	0	0	0
Total	80,119	11,131	130,661	221,911	0	0	0	221,651
Yellow birch								
Michigan	13,062	0	0	13,062	0	0	0	13,062
Wisconsin	12,085	0	28,182	40,267	0	0	0	40,267
Total	25,147	0	28,182	53,329	0	0	0	53,329
Cottonwood								
Michigan	391	0	0	391	0	0	0	391
Exported [3]	0	0	26	26	0	0	0	0
Total	391	0	26	417	0	0	0	391
Elm								
Michigan	20,132	0	21	20,153	0	0	0	20,153
Wisconsin	16,175	35	70,266	86,476	0	0	0	86,476
Exported [3]	0	0	451	451	0	0	0	0
Total	36,307	35	70,738	107,080	0	0	0	106,629

(Table 1 continued on next page)

(Table 1 continued)

Species and destination	Production by States 1/ Michigan	Minnesota	Wisconsin	Regional total	Imports Other U.S. 2/	Canada	Total imports	Total receipts
Roundwood (cont)								
Hickory								
Wisconsin	0	0	516	516	0	0	0	516
Total	0	0	516	516	0	0	0	516
Hard maple								
Michigan	56,808	0	24	56,832	0	0	0	56,832
Wisconsin	42,267	667	118,342	161,276	0	0	0	161,276
Exported 3/	0	0	143	143	0	0	0	0
Total	99,075	667	118,509	218,251	0	0	0	218,108
Soft maple								
Michigan	120,971	0	114	121,085	0	0	0	121,085
Wisconsin	18,290	14	62,900	81,204	0	0	0	81,204
Exported 3/	0	0	447	447	0	0	0	0
Total	139,261	14	63,461	202,736	0	0	0	202,289
Red oak								
Michigan	86,899	0	20	86,919	0	0	0	86,919
Wisconsin	3,065	20	59,720	62,805	0	0	0	62,805
Exported 3/	0	0	1,083	1,083	0	0	0	0
Total	89,964	20	60,823	150,807	0	0	0	149,724
White oak								
Michigan	22,588	0	0	22,588	0	0	0	22,588
Wisconsin	791	8	16,579	17,378	0	0	0	17,378
Exported 3/	0	0	409	409	0	0	0	0
Total	23,379	8	16,988	40,375	0	0	0	39,966
Other hardwoods								
Michigan	5,068	0	0	5,068	0	0	0	5,068
Wisconsin	2,570	0	3,670	6,240	0	0	0	6,240
Exported 3/	0	0	36	36	0	0	0	0
Total	7,638	0	3,706	11,344	0	0	0	11,308
Total roundwood								
Michigan	1,276,710	0	5,943	1,282,653	190	0	190	1,282,843
Minnesota	0	1,027,904	33,748	1,061,652	0	3,141	3,141	1,064,793
Wisconsin	377,821	171,464	2,054,011	2,603,296	20,312	19,136	39,448	2,642,744
Exported 3/	17,088	70,990	4,436	92,514	0	0	0	0
Total	1,671,619	1,270,358	2,098,138	5,040,115	20,502	22,277	42,779	4,990,380
Residue,softwood								
Michigan	9,711	0	30	9,741	0	4,032	4,032	13,773
Minnesota	0	34,223	0	34,223	78	2,627	2,705	36,928
Wisconsin	4,860	2,426	46,609	53,895	142,701	55,798	198,499	252,394
Exported 3/	0	2,010	0	2,010	0	0	0	0
Total	14,571	38,659	46,639	99,869	142,779	62,457	205,236	303,095
Residue,hardwoods								
Michigan	115,175	0	20,135	135,310	16,020	0	16,020	151,330
Minnesota	0	56,589	0	56,589	0	5,671	5,671	62,260
Wisconsin	36,283	2,897	219,263	258,443	732	0	732	259,175
Exported 3/	10	2,011	4,578	6,599	0	0	0	0
Total	151,468	61,497	243,976	456,941	16,752	5,671	22,423	472,765
All wood material								
Michigan	1,401,596	0	26,108	1,427,704	16,210	4,032	20,242	1,447,946
Minnesota	0	1,118,716	33,748	1,152,464	78	11,439	11,517	1,163,981
Wisconsin	418,964	176,787	2,319,883	2,915,634	163,745	74,934	238,679	3,154,313
Exported 3/	17,098	75,011	9,014	101,123	0	0	0	0
Total	1,837,658	1,370,514	2,388,753	5,596,925	180,033	90,405	270,438	5,766,240

1/ Vertical columns of figures under box heading "Production by States" present the amount of pulpwood cut in each State.
2/ Mostly western States.
3/ Pulpwood shipped to mills outside of region.
4/ Ponderosa pine
5/ Includes Ponderosa pine from other U.S.

1974. For the fourth consecutive year, red pine production advanced to a new high. Other record harvests included white pine, yellow birch, balsam poplar, and white oak.

Spruce and hemlock output dropped to modern day lows contributing to the 1 percent decline in total production. Hard maple pulpwood production sank 59,000 cords. Other species each showing declines of more than 20,000 cords included jack pine, white birch, and elm.

Lake States loggers produced 437,500 cords of whole tree chips,[4] off slightly from 1980, and 8 percent of the pulpwood from all sources in 1981. Michigan continued as the leading producer and Wisconsin produced nominal amounts. Production of whole tree chips by species group and State was:

State	Softwoods	Aspen	Other hardwoods
		(Thousand cords)	
Michigan	17.1	167.9	124.8
Minnesota	—	94.8	9.5
Wisconsin	1.1	19.4	2.9

Michigan—Demand for Michigan pulpwood fell 7 percent to 1.84 million cords. Aspen, hard maple, and jack pine production fell substantially. Loggers cut more than one-half of the aspen and about one-half of the pine in the Northern Lower Peninsula. Top-producing counties were Marquette, Iron, Menominee, and Delta.

Minnesota—Minnesota furnished 1.37 million cords. Aspen output climbed 102,000 cords but was

[4] *Pulpwood produced from chipping entire trees (all portions of trees above ground, except the stumps).*

partially offset by a 242,000 cord drop in spruce harvesting. Pine and spruce harvests were the lowest since World War II. St. Louis, Itasca, Koochiching, and Beltrami Counties supplied 64 percent of the roundwood.

Wisconsin—Wisconsin's record high 2.39 million cord production was 40 percent aspen, 9 percent jack pine, 8 percent red pine, and 10 percent hardwood mill residue. Demand was strong for Wisconsin aspen, balsam fir, and red pine. Aspen harvesting climbed sharply in the Northwestern Unit; balsam fir cutting continued rising in the Northeastern Unit for the third consecutive year. Counties furnishing more than 100,000 cords each were Marinette, Oneida, Bayfield, Forest, Douglas, Sawyer, and Price.

In this report we will show the distribution of the harvest in two ways: first, the amount of pulpwood cut relative to the growing stock volume in major pulpwood species (fig. 1); and second, the amount of pulpwood cut relative to commercial forest area (fig. 2). Cutting pressure weakened in all of Michigan, except the Southern Lower Peninsula, and strengthened briskly in Northwestern and Northeastern Wisconsin.

Receipts

Thirty-eight pulp, 3 particleboard, 1 oriented strand board, and 3 waferboard mills received 5.77 million cords of pulpwood in 1981. Of the 45 operating mills, 41 used aspen, 21 used birch, and 18 used maple (table 2).

Softwood residue imports from Canada fell after eight consecutive years of record-setting higher imports. Softwood residue shipments to the Lake States from other areas of the U.S. sank to near the level in 1968; principal suppliers were South Dakota and Wyoming.

Michigan—Only 46,000 of the 1.45 million cords procured were from out-of-State. Species in highest demand were aspen, soft maple, jack pine, and red oak.

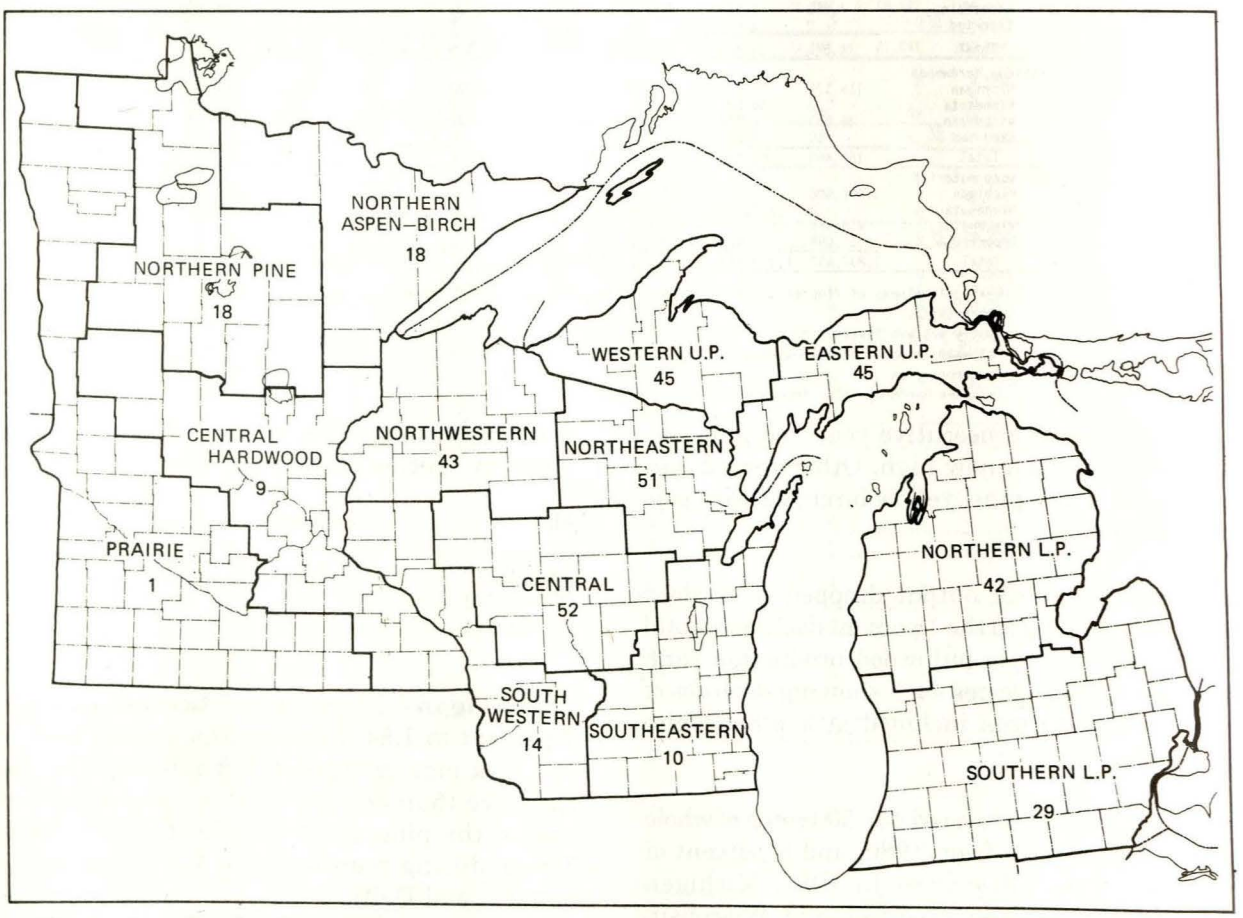


Figure 1.—*Cords of pulpwood (including chips from roundwood) harvested per 1,000 cords of merchantable volume in principal pulpwood species by Forest Inventory Unit, 1981. Merchantable volume was determined during the last forest inventory in each State.*

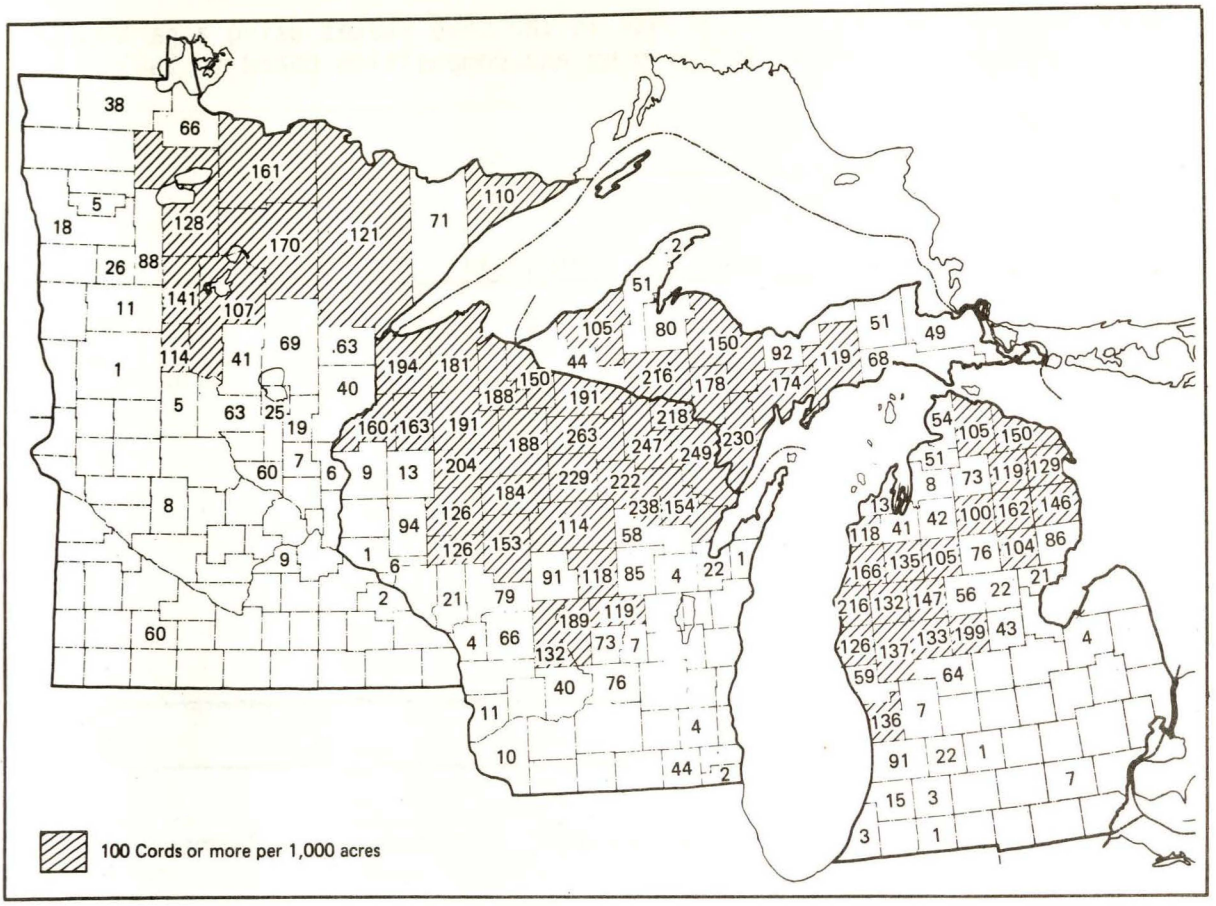


Figure 2.—*Cords of pulpwood cut per 1,000 acres of stocked commercial forest land in principal pulpwood-producing counties, 1981. Acres of stocked commercial forest land were determined during the last forest inventory in each State.*

Wisconsin—Receipts were 3.15 million cords including 419,000 cords from Michigan, 177,000 cords from Minnesota, 164,000 cords from other (primarily western) States, and 75,000 cords from Canada. Leading imported species were aspen, spruce, jack pine, and hard maple. Canadian shipments were spruce and softwood residue. More than three-fourths of the softwood residue requirements was procured from outside the Lake States.

Industry Trends and Analysis

Average daily pulp production rose 2 percent to 10,730 tons per day (table 3). Minnesota contributed most of the increase.

Another waferboard plant and the first oriented strand board plant (OSB) in the Lake States began operations in 1981. Annual production capacity of the Lake States particleboard, waferboard, and OSB plants was 520 million square feet as shown below:

Company	Location	Capacity[5] Million square feet (¾–inch basis)
Champion International Corp.	Gaylord, MI	175
Blandin Wood Products Co.	Grand Rapids, MN	45
Northwood Panelboard Co.	Bemidji, MN	80
Potlatch Corp.	Bemidji, MN	75
Louisiana-Pacific Corp.	Hayward, WI	65
Rodman Industries	Marinette, WI	15
Weyerhaeuser Co.	Marshfield, WI	65
		520

Two other OSB plants are likely to be completed in 1982. However, until the economy and housing starts move upward significantly, the OSB and waferboard plants will probably produce at rates considerably below capacity.

[5]*Directory of the Forest Products Industry, 1982.*

Table 2.--Numbers of industrial plants in the Lake States using a particular species or residue for pulping and composition board in 1981

Species and kind of material	Total Lake States	Michigan	Minnesota	Wisconsin
Aspen	41	8	11	22
Balsam fir	17	4	5	8
Birch	21	6	1	14
Hemlock	9	2	-	7
Pine	10	4	2	4
Spruce	16	2	5	9
Tamarack	7	1	2	4
Maple	18	7	-	11
Oak	16	7	-	9
Other hardwoods	22	7	6	9
Softwood residue	13	2	2	9
Hardwood residue	20	7	1	12
Total plants[1/]	45	8	11	26

[1/] Some plants use more than one species, so numbers in columns cannot be added.

Waferboard and OSB plants have been built in the Lake States to take advantage of increasing inventories of aspen and other hardwoods that are anticipated to be available at prices more economically attractive than softwoods, particularly softwoods in the western U.S. Another attraction is the location of these plants near major Midwest markets. This should provide favorable transportation costs compared to similar costs for competitive products from the West and South.

In terms of volume, red pine is a more important pulp species than spruce and is approaching the production of balsam fir. Although jack pine output has stagnated since 1975, red pine production for pulpwood has advanced every year except 1977. Using 3-year moving averages, annual pulpwood output from jack pine and red pine for 1975 thru 1980 was:

Year	Jack pine	Red pine
	(Thousand cords)	
1975	555	150
1976	530	156
1977	547	185
1978	570	205
1979	555	240
1980	518	265

Based on these averages, the annual rate of increase for red pine during this period was 12 percent. Red pine plantations are and should continue to be an important source of pulpwood.

CENTRAL STATES

Production

Pulpwood production slipped nominally to 428,000 cords in 1981 (table 4). Central States mill residue was in greater demand but was offset by declining roundwood output in each species group. Exports from the Central States continued to increase, setting another record for the thirteenth year in the last sixteen. Mills in Kentucky, Michigan, Wisconsin, Ohio, and Tennessee procured 58 percent of the output.

Indiana, the top producer, and Missouri increased production modestly. Production fell sharply in Iowa and slightly in Illinois.

Loggers cut pulpwood in 37 counties in Illinois, 25 counties in Indiana, 21 counties in Missouri, and 10 counties in Iowa (fig. 3). Logging territories expanded in northwest Indiana and northeast Missouri

Table 3.--Active woodpulp mills in the Lake States, by location, type of pulp produced, and average daily production, 1981

(In tons per 24 hours)[1/]

Company	Location	Average production				
		Total	Sulfite	Kraft	Groundwood and other mechanical	Semi-chemical
Michigan						
Abitibi-Price Inc.	Alpena	430	0	0	430	0
Champion International	Ontonagon	440	0	0	0	440
Manistique Pulp and Paper Co.	Manistique	90	0	0	90	0
Mead Corp.	Escanaba	750	0	600	150	0
Menasha Corp.	Otsego	225	0	0	0	225
Packaging Corp. of America	Filer City	600	0	0	0	600
Warren Co., S.D.	Muskegon	250	0	250	0	0
Total	7 Plants	2,785	0	850	670	1,265
Minnesota						
Blandin Paper Co.	Grand Rapids	325	0	0	325	0
Hennepin Paper Co.	Little Falls	75	0	0	75	0
Boise Cascade Corp.	International Falls	890	0	350	540	0
Potlatch Corp.	Cloquet	475	0	475	0	0
Superwood Corp.	Bemidji	90	0	0	90	0
St.Regis Paper Co.	Sartell	385	0	0	385	0
Superwood Corp.	Duluth	350	0	0	350	0
Conwed Corp.	Cloquet	55	0	0	55	0
Total	8 Plants	2,645	0	825	1,820	0
Wisconsin						
American Can Co.	Green Bay	150	150	0	0	0
Weyerhaeuser Co.	Rothschild	200	200	0	0	0
Badger Paper Mills	Peshtigo	100	100	0	0	0
Appleton Papers Inc.	Combined locks	200	0	0	200	0
Consolidated Papers, Inc.	Appleton	130	130	0	0	0
Consolidated Papers, Inc.	Stevens Point	230	0	0	230	0
Consolidated Papers, Inc.	Wisconsin Rapids	750	0	450	300	0
Green Bay Packaging, Inc.	Green Bay	200	0	0	0	200
Flambeau Paper Co.	Park Falls	110	110	0	0	0
Midtec Paper Corp.	Kimberly	150	0	0	150	0
Pentair Industries	Niagara	210	0	0	210	0
Mosinee Paper Mills Co.	Mosinee	210	0	210	0	0
Nekoosa Papers Inc.	Nekoosa	335	0	335	0	0
Nekoosa Papers Inc.	Port Edwards	235	235	0	0	0
Owens-Illinois	Tomahawk	1000	0	0	0	1,000
Procter and Gamble Inc.	Green Bay	(2/)	(2/)	(2/)	(2/)	(2/)
Rhinelander Paper Co.	Rhinelander	75	75	0	0	0
Genstar Corp.	Cornell	100	0	0	100	0
Superior Fiber Products Co.	Superior	180	0	0	180	0
Thilmany Pulp and Paper Co.	Kaukauna	400	0	400	0	0
Tomahawk Pulp Co., Inc.	Tomahawk	50	0	0	50	0
Wausau Paper Mills Co.	Brokaw	185	185	0	0	0
Superwood Corp.	Phillips	100	0	0	100	0
Total	23 Plants	5,300	1,185	1,395	1,520	1,200
All States	38 Plants	10,730	1,185	3,070	4,010	2,465

1/ Lockwood's Directory of the Paper and Allied Industries--1982.
2/ Capacity not available.

Table 4.--Production and imports of pulpwood, Central States, 1981

(In standard cords, unpeeled)[1/]

Species and destination	Production by States[2/]					Imports			Total receipts
	Illinois	Indiana	Iowa	Missouri	Regional total	Lake States	Other U.S.	Total imports	
Roundwood									
Softwoods									
Illinois	4,603	1,400	0	0	6,003	1,120	0	1,120	7,123
Exported[3/]	11,808	190	0	61	12,059	0	0	0	0
Total	16,411	1,590	0	61	18,062	1,120	0	1,120	7,123
Soft hardwoods									
Illinois	4,856	5,172	0	0	10,028	444	720	1,164	11,192
Ind.,Iowa,Mo.[4/]	5,612	10,764	2,580	3,250	22,206	1,157	1,186	2,343	24,549
Exported[3/]	9,141	0	0	998	10,139	0	0	0	0
Total	19,609	15,936	2,580	4,248	42,373	1,601	1,906	3,507	35,741
Hard hardwoods									
Illinois	160	0	0	0	160	0	0	0	160
Ind.,Iowa,Mo.[4/]	6,208	10,711	7,194	8,521	32,634	1,715	1,180	2,895	35,529
Exported[3/]	14,002	11,093	0	9,065	34,160	0	0	0	0
Total	20,370	21,804	7,194	17,586	66,954	1,715	1,180	2,895	35,689
Total roundwood									
Illinois	9,619	6,572	0	0	16,191	1,564	720	2,284	18,475
Ind.,Iowa,Mo.[4/]	11,820	21,475	9,774	11,771	54,840	2,872	2,366	5,238	60,078
Exported[3/]	34,951	11,283	0	10,124	56,358	0	0	0	0
Total	56,390	39,330	9,774	21,895	127,389	4,436	3,086	7,522	78,553
Residue, softwood									
Illinois	260	0	0	0	260	702	486	1,188	1,448
Exported[3/]	180	0	6,585	2,242	9,007	0	0	0	0
Total	440	0	6,585	2,242	9,267	702	486	1,188	1,448
Residue, hardwood									
Illinois	2,105	0	0	0	2,105	0	0	0	2,105
Ind.,Iowa,Mo.[4/]	18,918	39,546	15,850	31,691	106,005	5,688	0	5,688	111,693
Exported[3/]	22,368	106,287	0	54,998	183,653	0	0	0	0
Total	43,391	145,833	15,850	86,689	291,763	5,688	0	5,688	113,798
All wood material									
Illinois	11,984	6,572	0	0	18,556	2,266	1,206	3,472	22,028
Ind.,Iowa,Mo.[4/]	30,738	61,021	25,624	43,462	160,845	8,560	2,366	10,926	171,771
Exported[3/]	57,499	117,570	6,585	67,364	249,018	0	0	0	0
Total	100,221	185,163	32,209	110,826	428,419	10,826	3,572	14,398	193,799

[1/] Factors used in converting to standard green cords (128 cu. ft.) were: 4,500 pounds of soft hardwood roundwood; 5,000 pounds of hard hardwood or coniferous roundwood; 4,100 pounds of softwood chips (green); 4,400 pounds of hardwood chips (green); 2,500 Pounds of chips (all species, dry).

[2/] Vertical columns of figures under box heading--Production by States--present the amount of pulpwood cut in each State.

[3/] Pulpwood shipped to mills outside the region.

[4/] Combined to prevent disclosure of individual mill receipts.

and contracted in eastern Indiana, western Missouri, and south-central Illinois.

RECEIPTS

Pulpwood receipts at seven Central States pulpmills were 194,000 cords, down 12 percent from 1980. All residue and roundwood species groups participated in the decline except hard hardwoods. Receipts in Illinois plunged to 22,000 cords, the lowest demand since records were first compiled in 1955. Four Illinois mill closings in 1981 led to the low demand in that State. Most of the decline was concentrated in hardwood residue. Imports declined to 7 percent of total receipts, less than half the imports in 1980. Six States—Wisconsin, Kentucky, Kansas, Minnesota, Ohio, and Tennessee—shipped wood to the Central States.

Industry Trends and Analysis

Average daily pulp production dropped to 840 tons per day (table 5). Five mills closed during 1980; some may be permanent closings. In addition, two other Illinois mills closed permanently in December 1981. Illinois is likely to have only one operating mill in 1982 compared to seven mills as recently as 1979. All of the mills that closed in 1980 and 1981 produced organic (wood-based) roofing felt—demand for roofing materials has declined severely during the recession.

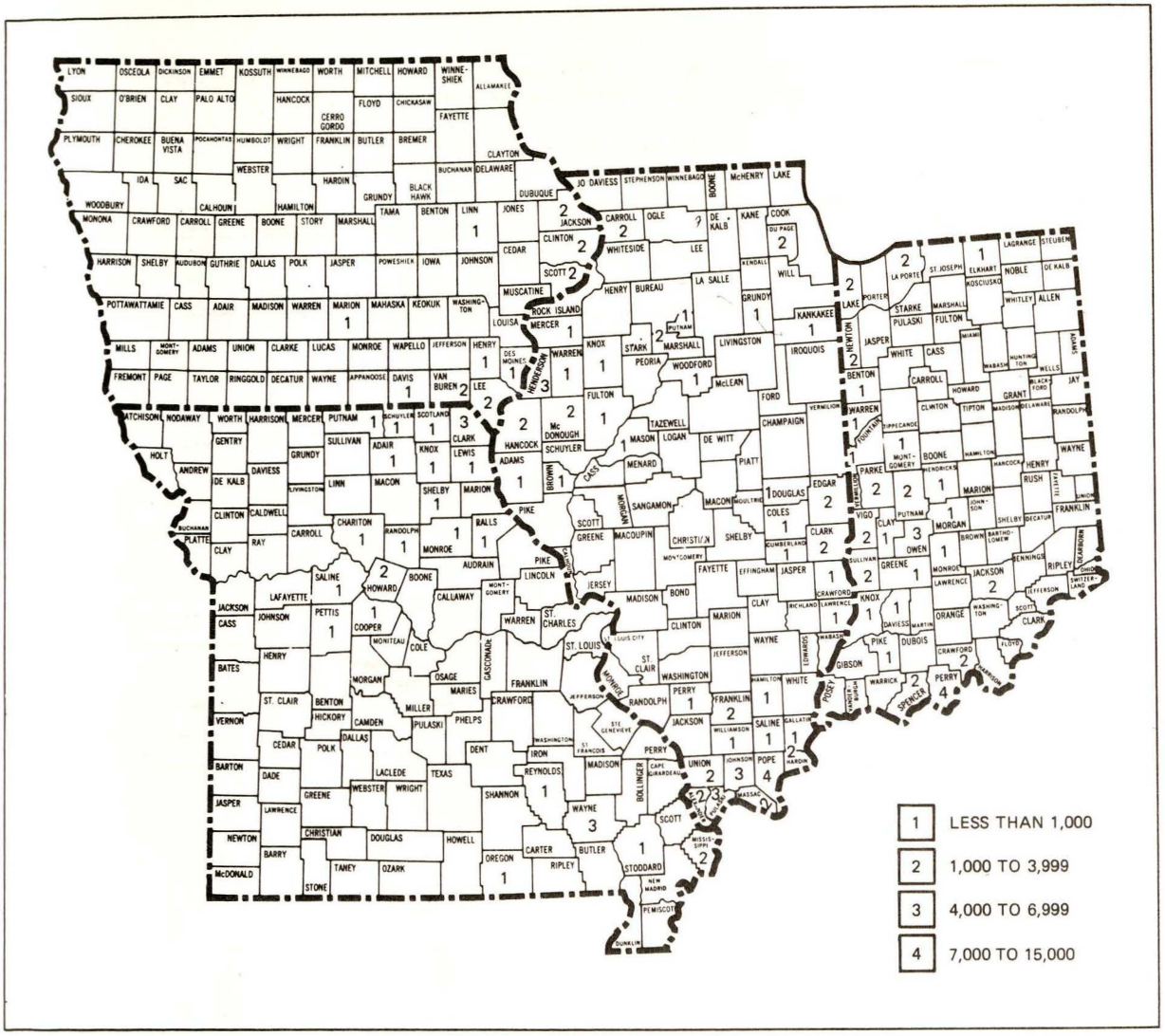


Figure 3.—*Harvest of pulpwood (including chips from roundwood) in the Central States by counties, in standard cords, 1981.*

In recent years nearly all roofing felt producers have either invested in new capacity or are studying the possibilities, and all of these expansions use fiberglass rather than wood fiber. With roofing market shares reduced by lower demand, market shares are being transferred to new fiberglass mat machines from organic felt machines, resulting in closure of some organic roofing felt plants. These shifts from organic to fiberglass felts is likely to continue. Organic felts have lost price competitiveness to fiberglass felts because the price of the asphalt used in organic felts has risen rapidly in recent years.

Table 5.--Active woodpulp mills in the Central States, by location, type of pulp produced, and average daily production, 1981

(In tons per 24 hours)[1/]

Company	Location	Average production				
		Total	Sulfite	Kraft	Groundwood and other Mechanical	Semi-chemical
Illinois						
Bird and Son, Inc.	Chicago	40	0	0	40	0
Celotex Corp.	Peoria	90	0	0	90	0
GAF Corp.	Joliet	150	0	0	150	0
Total	3 plants	280	0	0	280	0
Indiana						
Weston Paper and Mfg. Co.	Terre Haute	270	0	0	0	270
Total	1 plant	270	0	0	0	270
Iowa						
Celotex Corp.	Dubuque	90	0	0	90	0
Consolidated Packaging Corp.	Fort Madison	140	0	0	0	140
Total	2 plants	230	0	0	90	140
Missouri						
Huebert Fibreboard, Inc.	Booneville	60	0	0	60	0
Total	1 plant	60	0	0	60	0
All States	7 plants	840	0	0	430	410

[1/] Lockwood's Directory of the Paper and Allied Industries-1982.

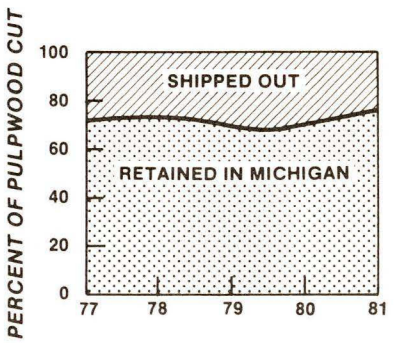
APPENDIX

Table 6.--Lake States pulpwood production[1/] by State of origin and destination, 1977-1981

(In thousand standard cords, unpeeled)

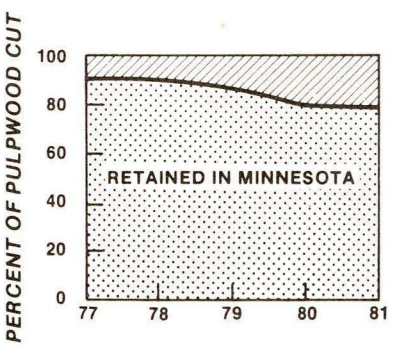
MICHIGAN

	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1977	1,595	-	407	1,159	29
1978	1,675	-	404	1,248	23
1979	1,981	(2/)	516	1,428	37
1980	1,969	-	490	1,443	36
1981	1,838	-	419	1,402	17
5 year average	1,812	(2/)	447	1,336	29



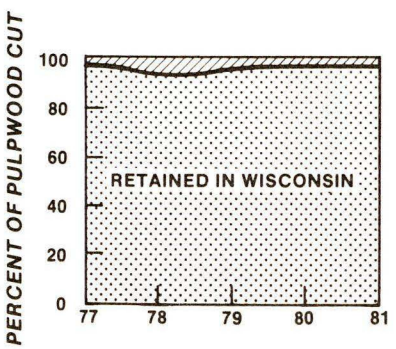
MINNESOTA

	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1977	1,333	1,149	154	-	30
1978	1,338	1,155	162	-	21
1979	1,458	1,226	169	-	63
1980	1,333	1,044	216	-	73
1981	1,371	1,119	177	-	75
5 year average	1,367	1,139	176	-	52



WISCONSIN

	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1977	1,816	26	1,714	64	12
1978	1,895	26	1,779	70	20
1979	2,109	20	2,024	47	18
1980	2,362	18	2,297	35	12
1981	2,389	34	2,320	26	9
5 year average	2,114	25	2,027	48	14



[1/] Production in 1977-1978 does not include wood for particleboard or waferboard plants.

[2/] Less than 500 cords.

Table 7.--Lake States pulpwood production from roundwood by Forest Inventory Unit and destination by State, 1981

(In hundred standard cords, unpeeled)

Unit	Total cut	Destination of pulpwood			
		Michigan	Minnesota	Wisconsin	Other
MICHIGAN					
E. Upper Peninsula	4,136	2,885	0	1,133	118
W. Upper Peninsula	5,174	2,620	0	2,554	0
N. Lower Peninsula	6,928	6,784	0	91	53
S. Lower Peninsula	478	478	0	0	0
Total roundwood	16,716	12,767	0	3,778	171
Total residue	1,660	1,249	0	411	0
Total	18,376	14,016	0	4,189	171
MINNESOTA					
Aspen-Birch	6,355	0	4,952	693	710
Northern Pine	5,970	0	5,004	966	0
Central Hardwood	364	0	320	44	0
Prairie	16	0	4	12	0
Total roundwood	12,705	0	10,280	1,715	710
Total residue	1,001	0	908	53	40
Total	13,706	0	11,188	1,768	750
WISCONSIN					
Northeastern	8,799	55	0	8,744	0
Northwestern	8,700	5	337	8,358	0
Central	3,149	0	0	3,133	16
Southwestern	246	0	0	217	29
Southeastern	87	0	0	87	0
Total roundwood	20,981	60	337	20,539	45
Total residue	2,907	202	0	2,659	46
Total	23,888	262	337	23,198	91

Table 8.--Lake States pulpwood production[1/] from roundwood by species, State, and Forest Inventory Unit, 1977-1981.

(In thousand standard cords, unpeeled)

MICHIGAN

Unit	Aspen					Balsam fir					Birch					Hemlock				
	Annual production					Annual production					Annual production					Annual production				
	1977	1978	1979	1980	1981	1977	1978	1979	1980	1981	1977	1978	1979	1980	1981	1977	1978	1979	1980	1981
Eastern Upper Peninsula	106	103	125	116	89	48	44	43	57	57	22	28	35	29	36	31	24	26	32	23
Western Upper Peninsula	195	220	204	209	201	45	42	41	46	42	29	46	53	40	44	31	24	19	26	16
Northern Lower Peninsula	222	257	375	374	350	2	1	1	6	5	11	16	21	34	25	(2/)	(2/)	--	(2/)	(2/)
Southern Lower Peninsula	9	6	5	6	12	--	--	--	--	--	(2/)	(2/)	(2/)	(2/)	(2/)	--	--	--	--	--
Total	532	586	709	705	652	95	87	85	109	104	62	90	109	103	105	62	48	45	58	39

MINNESOTA

Aspen-Birch	375	363	392	313	352	60	59	72	73	69	15	2	3	11	9	--	--	--	--	--
Northern Pine	292	306	404	357	422	39	37	46	38	31	13	5	1	4	2	--	--	--	--	--
Central Hardwood	30	35	41	29	27	--	--	(2/)	--	--	2	2	3	(2/)	(2/)	--	--	--	--	--
Prairie	--	--	1	(2/)	(2/)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	697	704	838	699	801	99	96	118	111	100	30	9	7	15	11	--	--	--	--	--

WISCONSIN

Northeastern	334	331	364	459	415	57	53	60	66	79	54	62	76	91	74	32	30	26	26	24
Northwestern	329	300	319	326	469	15	21	23	35	25	44	53	63	80	73	8	19	13	6	4
Central	31	37	66	85	79	1	1	1	1	1	5	6	11	15	12	3	4	1	2	1
Southwestern	1	1	1	1	1	--	--	--	--	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	--	--	--	--	--
Southeastern	1	(2/)	1	2	1	--	(2/)	--	--	--	(2/)	(2/)	1	(2/)	(2/)	--	--	--	--	--
Total	696	669	751	873	965	73	75	84	102	105	103	121	151	186	159	43	53	40	34	29
Lake States	1,925	1,959	2,298	2,277	2,418	267	258	287	322	309	195	220	267	304	275	105	101	85	92	68

(Table 8 continued on next page)

1/ Production in 1977-1978 does not include wood for particleboard or waferboard plants.
2/ Less than 500 cords.
3/ Includes small quantity of cedar not shown in other parts of table.

(Table 8 continued)

MICHIGAN

Unit	Pine					Spruce					Tamarack					Other hardwoods				
	Annual production					Annual production					Annual production					Annual production				
	1977	1978	1979	1980	1981	1977	1978	1979	1980	1981	1977	1978	1979	1980	1981	1977	1978	1979	1980	1981
Eastern Upper Peninsula	82	85	119	70	56	27	25	21	34	24	2	1	1	3	3	69	73	83	124	119
Western Upper Peninsula	49	50	48	53	45	21	18	17	23	19	1	1	1	3	3	84	134	174	163	143
Northern Lower Peninsula	119	122	166	124	118	(2/)	(2/)	1	1	2	--	--	--	--	--	162	179	194	206	194
Southern Lower Peninsula	12	20	17	21	18	--	--	--	--	--	--	--	--	--	--	18	3	5	8	17
Total	262	277	350	268	237	48	43	39	58	45	3	2	2	6	6	333	389	456	501	473
MINNESOTA																				
Aspen-Birch	97	89	75	66	71	110	126	119	127	93	24	18	18	22	11	12	17	18	30	31
Northern Pine	73	89	75	76	70	43	38	34	43	34	15	10	16	18	18	5	9	9	16	19
Central Hardwood	4	8	8	9	6	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	--	(2/)	(2/)	(2/)	8	13	4	2	3
Prairie	--	--	--	--	(2/)	--	(2/)	--	(2/)	(2/)	3	2	2	3	1	--	--	--	(2/)	--
Total	174	186	158	151	147	153	164	153	170	127	42	30	36	43	30	25	39	31	48	53
WISCONSIN																				
Northeastern	68	98	95	95	111	16	16	14	27	22	2	2	1	2	1	152	113	150	181	154
Northwestern	103	122	113	113	131	3	3	4	5	5	1	1	1	1	3	104	159	165	186	160
Central	113	121	127	149	150	(2/)	(2/)	(2/)	1	(2/)	1	(2/)	(2/)	(2/)	1	121	91	121	82	70
Southwestern	8	11	20	22	20	--	--	--	(2/)	(2/)	--	--	--	--	--	4	8	4	4	3
Southeastern	4	5	6	8	7	--	--	1	(2/)	--	--	--	--	--	--	2	2	1	2	2
Total	296	357	361	387	419	19	19	19	33	27	4	3	2	3	5	383	373	441	455	389
Lake States	732	820	869	806	803	220	226	211	261	199	49	35	40	52	41	741	801	928	1004	915

(Table 8 continued on next page)

(Table 8 continued)

Unit	All species[3/] Annual production				
	1977	1978	1979	1980	1981
MICHIGAN					
Eastern Upper Peninsula	390	387	457	469	414
Western Upper Peninsula	458	537	561	566	517
Northern Lower Peninsula	516	575	759	745	693
Southern Lower Peninsula	39	29	27	35	48
Total	1,403	1,528	1,804	1,815	1,672
MINNESOTA					
Aspen-Birch	693	674	696	642	635
Northern Pine	480	494	585	552	597
Central Hardwood	44	58	56	40	36
Prairie	3	2	3	3	2
Total	1,220	1,228	1,340	1,237	1,270
WISCONSIN					
Northeastern	716	706	786	947	880
Northwestern	608	678	701	752	870
Central	275	260	327	335	315
Southwestern	13	20	25	27	24
Southeastern	7	7	10	12	9
Total	1,619	1,671	1,849	2,073	2,098
Lake States	4,242	4,427	4,993	5,125	5,040

Table 9.--Lake States pulpwood production from roundwood by county and species, 1981

(In standard cords, unpeeled)

MICHIGAN

Unit and county[1/]	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood
E. Upper Peninsula												
Alger	1,011	4,128	3,760	1,597	1,722	800	1,216	126	432	4,492	2,195	1,097
Chippewa	92	5,256	2,534	7,101	2,348	799	2,988	453	93	4,208	984	492
Delta	3,601	15,316	4,763	4,134	2,439	3,648	8,912	1,029	764	24,740	3,617	1,809
Luce	98	3,257	3,785	4,333	448	594	2,675	98	79	2,153	671	335
Mackinac	314	6,074	687	3,699	1,846	500	3,478	268	125	6,489	1,329	665
Menominee	1,139	15,096	4,241	522	2,880	4,448	2,895	516	2,277	36,476	4,066	2,091
Schoolcraft	844	7,555	2,785	8,873	2,052	834	2,207	125	412	10,778	3,153	1,576
Total	7,099	56,682	22,555	30,259	13,735	11,623	24,371	2,615	4,182	89,336	16,015	8,065
W. Upper Peninsula												
Baraga	134	2,244	2,453	1,359	1,069	890	838	399	277	11,937	0	1,384
Dickinson	357	6,273	1,269	718	1,086	564	1,697	424	773	33,856	2,064	1,114
Gogebic	0	1,164	506	160	127	64	430	0	229	12,404	0	288
Houghton	0	2,552	2,131	4,159	447	219	990	961	143	6,660	0	203
Iron	161	12,831	4,608	3,245	3,152	2,459	7,655	261	1,251	57,203	449	992
Keweenaw	0	54	11	0	24	0	252	0	0	0	0	0
Marquette	3,553	16,704	4,281	14,315	7,099	4,159	6,684	1,060	659	30,011	6,669	3,383
Ontonagon	0	217	636	14	0	0	284	0	740	49,334	0	1,750
Total	4,205	42,039	15,895	23,970	13,004	8,355	18,830	3,105	4,072	201,405	9,182	9,114
N. Lower Peninsula												
Alcona	0	122	0	1,703	1,326	0	9	0	473	27,677	1,398	111
Alpena	0	213	0	170	85	0	151	0	467	17,212	906	60
Antrim	0	0	0	0	61	0	0	0	4	720	0	0
Arenac	0	0	0	0	0	0	0	0	118	898	43	12
Benzie	0	0	0	271	0	0	0	0	116	6,394	0	150
Charlevoix	0	0	0	0	0	0	0	0	133	4,198	0	104
Cheboygan	0	252	0	1,516	0	0	34	0	667	24,286	349	78
Clare	0	0	0	34	0	0	0	0	2	9,779	0	0
Crawford	0	668	0	19,099	322	0	0	0	10	4,994	0	0
Emmet	0	0	0	0	585	0	0	0	106	6,974	0	0
Gladwin	0	0	0	0	127	0	0	0	27	3,488	0	26
Grand Traverse	0	0	0	274	1,175	0	0	0	42	3,120	0	104
Iosco	0	0	0	5,471	2,506	0	0	0	597	5,811	133	18
Isabella	0	0	0	0	535	0	0	0	0	10,910	0	0
Kalkaska	0	0	0	1,935	0	0	0	0	27	5,825	0	52
Lake	0	0	0	11,325	0	0	0	0	179	11,775	0	149
Leelanau	0	0	0	0	695	0	0	0	0	291	0	0
Manistee	0	0	0	1,000	0	0	0	0	164	14,700	0	260
Mason	0	0	0	0	2,901	0	0	0	50	13,149	0	298
Mecosta	0	0	0	0	1,724	0	0	0	31	10,750	0	0
Midland	0	0	0	0	0	0	0	0	6	4,509	0	0
Missaukee	0	0	0	726	0	0	0	0	41	13,845	0	104
Montmorency	0	198	0	3,099	544	0	211	0	677	19,147	535	130
Newaygo	0	0	0	0	9,280	0	0	0	73	19,955	0	0
Oceana	0	0	0	0	5,861	0	0	0	104	6,383	0	156
Ogemaw	0	0	0	7,960	0	0	0	0	394	9,345	125	9
Osceola	0	0	0	0	332	0	0	0	66	15,384	0	52
Oscoda	0	662	198	15,037	212	100	108	0	365	24,243	543	65
Otsego	0	87	133	3,869	969	43	0	0	116	8,660	25	16
Presque Isle	0	2,342	44	2,148	293	0	992	0	926	23,788	1,017	164
Roscommon	0	425	0	3,369	0	0	0	0	112	10,906	28	52
Wexford	0	0	0	4,362	4,362	0	0	0	232	10,354	0	208
Total	0	4,969	375	83,368	33,895	143	1,505	0	6,325	349,470	5,102	2,378
S. Lower Peninsula												
Allegan	0	0	0	0	1,068	0	0	0	0	2,513	0	0
Barry	0	0	0	0	753	0	0	0	10	1,073	0	0
Berrien	0	0	0	0	228	0	0	0	0	0	0	0
Calhoun	0	0	0	0	21	0	0	0	0	0	0	0
Cass	0	0	0	0	23	0	0	0	0	0	0	0
Clinton	0	0	0	0	0	0	0	0	0	47	0	0
Eaton	0	0	0	0	55	0	0	0	0	0	0	0
Kalamazoo	0	0	0	0	166	0	0	0	0	49	0	0
Kent	0	0	0	0	754	0	0	0	0	79	0	0
Montcalm	0	0	0	0	555	0	0	0	42	5,111	0	0
Muskegon	0	0	0	0	3,614	0	0	0	46	2,734	0	0
Ottawa	0	0	0	0	10,170	0	0	0	6	32	0	0
St. Joseph	0	0	0	0	50	0	0	0	0	0	0	0
Tuscola	0	0	0	0	146	0	0	0	0	149	0	0
Van Buren	0	0	0	0	308	0	0	0	0	298	0	0
Washtenaw	0	0	0	0	486	0	0	0	0	0	0	0
Total	0	0	0	0	18,397	0	0	0	104	12,085	0	0
State total	11,304	103,690	38,825	137,597	79,031	20,121	44,706	5,720	14,683	652,296	30,299	19,557

(Table 9 continued on next page)

(Table 9 continued)

MICHIGAN

Unit and county[1/]	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hard-woods	All species
E. Upper Peninsula												
Alger	2,548	3,311	1,860	0	2,378	0	6,751	4,316	596	77	203	44,616
Chippewa	643	1,566	738	0	638	0	1,731	1,477	164	0	92	34,397
Delta	1,028	6,485	2,866	0	2,837	0	5,416	5,626	683	17	335	100,065
Luce	568	965	168	0	513	0	1,230	1,301	112	0	62	23,445
Mackinac	1,120	2,202	443	0	862	0	2,441	2,650	0	0	123	35,315
Menominee	437	7,908	1,605	0	4,044	0	9,209	10,846	1,429	179	468	112,772
Schoolcraft	1,581	5,383	478	0	2,355	0	3,354	7,445	683	101	460	63,034
Total	7,925	27,820	8,158	0	13,627	0	30,132	33,661	3,667	374	1,743	413,644
W. Upper Peninsula												
Baraga	0	1,427	2,461	0	2,893	0	7,325	3,052	190	16	527	40,875
Dickinson	0	4,281	691	0	2,225	0	4,014	4,488	359	10	321	66,584
Gogebic	0	348	2,240	0	2,211	0	5,011	1,668	12	0	421	27,283
Houghton	0	1,336	973	0	1,080	0	2,493	1,491	101	18	175	26,132
Iron	0	4,445	5,911	0	6,841	0	17,242	9,069	1,240	294	1,498	140,807
Keweenaw	0	0	4	0	4	0	8	3	0	0	1	361
Marquette	0	13,539	2,389	0	4,740	0	10,219	13,311	1,177	79	962	144,993
Ontonagon	0	1,245	2,320	0	2,404	0	9,458	1,821	27	2	144	70,396
Total	0	26,621	16,989	0	22,398	0	55,770	34,903	3,106	419	4,049	517,431
N. Lower Peninsula												
Alcona	57	2,350	0	0	0	0	154	3,398	4,984	660	32	44,454
Alpena	86	1,210	0	0	0	0	239	2,746	3,103	414	0	27,062
Antrim	4	14	0	0	2	0	34	391	0	0	1	1,231
Arenac	30	80	0	0	0	0	83	650	0	0	0	1,914
Benzie	179	327	0	0	0	0	414	4,080	1,927	283	146	14,287
Charlevoix	87	924	0	0	19	0	604	761	147	0	6	6,983
Cheboygan	380	2,934	0	0	89	0	2,389	4,131	963	4	4	38,076
Clare	0	210	0	0	0	0	2	263	1,333	434	0	12,057
Crawford	72	102	0	0	3	0	251	833	834	0	19	27,207
Emmet	173	461	0	0	7	0	767	1,089	272	0	70	10,504
Gladwin	0	199	0	0	0	0	2	61	286	13	0	4,229
Grand Traverse	208	177	0	0	0	0	208	416	312	104	104	6,244
Iosco	30	648	0	0	17	0	127	1,807	1,853	177	59	19,254
Isabella	1,118	0	0	0	0	0	0	1,242	12	1,118	0	14,935
Kalkaska	62	254	0	0	9	0	243	934	790	156	69	10,356
Lake	75	359	0	0	0	0	282	3,429	10,654	1,158	146	39,531
Leelanau	0	15	0	0	0	0	0	0	20	0	0	1,021
Manistee	271	979	0	0	0	0	460	8,834	8,564	504	208	35,944
Mason	216	792	0	0	0	0	375	7,135	5,915	506	187	31,524
Mecosta	0	194	0	0	0	0	41	876	1,886	419	0	15,921
Midland	0	1,125	0	0	0	0	0	699	0	0	0	6,339
Missaukee	210	1,189	0	0	0	0	222	2,425	2,411	104	106	21,383
Montmorency	179	2,376	0	0	22	0	1,111	3,788	2,442	73	49	34,581
Newaygo	0	171	0	0	0	0	97	1,314	6,298	5,323	0	42,511
Oceana	37	239	0	0	0	0	158	1,093	3,428	707	42	18,208
Ogemaw	45	620	0	0	11	0	235	1,502	2,263	133	67	22,709
Osceola	52	768	0	0	0	0	70	924	4,804	554	34	23,040
Oscoda	137	1,313	0	0	0	0	462	2,493	3,506	312	119	49,875
Otsego	125	822	0	0	49	0	1,221	1,932	1,004	0	34	19,105
Presque Isle	113	3,783	0	0	32	0	555	3,216	534	8	0	39,955
Roscommon	55	601	0	0	0	0	10	483	2,483	83	62	18,669
Wexford	583	338	0	0	22	0	1,878	5,406	5,293	277	282	33,597
Total	4,584	25,574	0	0	282	0	12,694	68,351	78,321	13,524	1,846	692,706
S. Lower Peninsula												
Allegan	0	0	0	391	0	0	341	967	0	7,190	0	12,470
Barry	0	10	0	0	0	0	13	64	450	96	0	2,469
Berrien	0	0	0	0	0	0	0	0	0	0	0	228
Calhoun	0	0	0	0	0	0	0	0	0	0	0	21
Cass	0	0	0	0	0	0	0	0	0	0	0	23
Clinton	0	0	0	0	0	0	0	0	0	0	0	47
Eaton	0	0	0	0	0	0	0	0	0	0	0	55
Kalamazoo	0	0	0	0	0	0	0	0	0	0	0	215
Kent	0	0	0	0	0	0	0	0	0	0	0	833
Montcalm	0	42	0	0	0	0	56	481	1,975	816	0	9,078
Muskegon	0	46	0	0	0	0	61	305	2,139	459	0	9,404
Ottawa	0	6	0	0	0	0	8	41	306	61	0	10,630
St. Joseph	0	0	0	0	0	0	0	0	0	0	0	50
Tuscola	0	0	0	0	0	0	0	0	0	0	0	295
Van Buren	0	0	0	0	0	0	0	488	0	440	0	1,534
Washtenaw	0	0	0	0	0	0	0	0	0	0	0	486
Total	0	104	0	391	0	0	479	2,346	4,870	9,062	0	47,838
State total	12,509	80,119	25,147	391	36,307	0	99,075	139,261	89,964	23,379	7,638	1,671,619

(Table 9 continued on next page)

(Table 9 continued) MINNESOTA

Unit and county[1/]	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood
Aspen-Birch												
Carlton	0	910	0	333	370	37	801	439	0	13,871	2,498	0
Cook	0	20,294	0	3,531	1	0	14,015	0	0	20,037	580	0
Koochiching	0	16,764	0	17,476	2,751	1,422	42,704	9,189	62	103,085	9,440	0
Lake	0	5,046	0	4,134	1,144	1,916	13,549	271	0	29,704	489	0
St. Louis	0	26,252	0	24,634	6,916	5,914	21,786	1,500	21	185,033	17,480	0
Total	0	69,266	0	50,108	11,182	9,289	92,855	11,399	83	351,730	30,487	0
Northern Pine												
Aitkin	0	853	0	305	339	34	414	2,198	0	37,036	4,580	0
Becker	0	0	0	1,688	307	41	0	0	0	1,433	60	0
Beltrami	0	7,196	0	9,231	1,784	331	9,696	7,757	57	59,868	2,968	99
Cass	0	1,896	0	13,176	2,181	427	530	1,033	32	70,810	1,072	0
Clearwater	0	1,066	0	1,528	416	76	2,098	2,303	21	17,893	808	47
Crow Wing	0	0	0	6,075	631	22	0	0	6	8,438	0	0
Hubbard	0	666	0	2,844	308	82	779	493	0	48,604	2,130	57
Itasca	0	19,384	0	8,270	1,430	456	7,213	3,027	21	166,731	6,143	21
Lake of the Woods	0	390	0	5,407	170	37	10,453	540	0	5,301	430	0
Mahnomen	0	0	0	164	31	10	0	0	0	2,307	172	5
Roseau	0	26	0	1,976	62	21	3,136	314	0	1,521	210	0
Wadena	0	0	0	8,652	1,092	184	0	0	0	2,120	122	0
Total	0	31,477	0	59,316	8,751	1,721	34,319	17,665	137	422,062	18,695	229
Central Hardwood												
Chisago	0	0	0	124	191	0	0	0	0	0	0	0
Goodhue	0	0	0	0	24	0	0	0	0	0	0	0
Isanti	0	0	0	0	337	0	0	0	0	0	0	0
Kanabec	0	0	0	0	0	0	0	0	0	2,380	0	0
Mille Lacs	0	0	0	189	21	0	116	152	0	2,561	0	2
Morrison	0	0	0	189	21	0	14	0	0	9,001	0	0
Otter Tail	0	0	0	0	0	0	0	7	0	205	0	0
Pine	0	0	0	472	689	52	0	0	0	12,829	2,498	0
Scott	0	0	0	119	0	0	0	0	0	0	0	0
Sherburne	0	0	0	364	2,970	25	0	0	0	0	0	0
Todd	0	0	0	250	44	0	0	0	0	205	0	0
Wabasha	0	0	0	132	0	0	0	0	0	0	0	0
Total	0	0	0	1,839	4,297	77	130	159	0	27,181	2,498	2
Prairie												
Cottonwood	0	0	0	0	120	0	0	0	0	0	0	0
Kandiyohi	0	0	0	79	0	0	0	0	0	0	0	0
Polk	0	0	0	0	0	0	114	730	0	356	0	0
Red Lake	0	0	0	105	25	0	0	0	0	0	0	0
Total	0	0	0	184	145	0	114	730	0	356	0	0
State total	0	100,743	0	111,447	24,375	11,087	127,418	29,953	220	801,329	51,680	231

Unit and county[1/]	Beech	White birch	Yellow birch	Cottonwood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods	All species
Aspen-Birch												
Carlton	0	162	0	0	0	0	0	0	0	0	0	19,421
Cook	0	138	0	0	0	0	0	0	0	0	0	58,596
Koochiching	0	554	0	0	0	0	312	0	0	0	0	203,759
Lake	0	3,795	0	0	0	0	0	0	0	0	0	60,048
St. Louis	0	4,019	0	0	0	0	59	0	0	0	0	293,614
Total	0	8,668	0	0	0	0	371	0	0	0	0	635,438
Northern Pine												
Aitkin	0	216	0	0	0	0	0	0	0	0	0	45,975
Becker	0	0	0	0	0	0	0	0	0	0	0	3,529
Beltrami	0	981	0	0	10	0	107	2	0	0	0	100,087
Cass	0	358	0	0	24	0	31	10	20	8	0	91,608
Clearwater	0	200	0	0	0	0	52	0	0	0	0	26,508
Crow Wing	0	19	0	0	1	0	2	2	0	0	0	15,196
Hubbard	0	182	0	0	0	0	0	0	0	0	0	56,145
Itasca	0	351	0	0	0	0	104	0	0	0	0	213,151
Lake of the Woods	0	0	0	0	0	0	0	0	0	0	0	22,728
Mahnomen	0	16	0	0	0	0	0	0	0	0	0	2,705
Roseau	0	0	0	0	0	0	0	0	0	0	0	7,266
Wadena	0	0	0	0	0	0	0	0	0	0	0	12,170
Total	0	2,323	0	0	35	0	296	14	20	8	0	597,068
Central Hardwood												
Chisago	0	0	0	0	0	0	0	0	0	0	0	315
Goodhue	0	0	0	0	0	0	0	0	0	0	0	24
Isanti	0	0	0	0	0	0	0	0	0	0	0	337
Kanabec	0	0	0	0	0	0	0	0	0	0	0	2,380
Mille Lacs	0	0	0	0	0	0	0	0	0	0	0	3,041
Morrison	0	0	0	0	0	0	0	0	0	0	0	9,225
Otter Tail	0	0	0	0	0	0	0	0	0	0	0	212
Pine	0	140	0	0	0	0	0	0	0	0	0	16,680
Scott	0	0	0	0	0	0	0	0	0	0	0	119
Sherburne	0	0	0	0	0	0	0	0	0	0	0	3,359
Todd	0	0	0	0	0	0	0	0	0	0	0	499
Wabasha	0	0	0	0	0	0	0	0	0	0	0	132
Total	0	140	0	0	0	0	0	0	0	0	0	36,323
Prairie												
Cottonwood	0	0	0	0	0	0	0	0	0	0	0	120
Kandiyohi	0	0	0	0	0	0	0	0	0	0	0	79
Polk	0	0	0	0	0	0	0	0	0	0	0	1,200
Red Lake	0	0	0	0	0	0	0	0	0	0	0	130
Total	0	0	0	0	0	0	0	0	0	0	0	1,529
State total	0	11,131	0	0	35	0	667	14	20	8	0	1,270,358

(Table 9 continued on next page)

(Table 9 continued)

WISCONSIN

Unit and county[1/]	Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar	Basswood
Northeastern												
Florence	0	5,348	820	1,169	2,427	327	1,843	178	434	32,619	0	92
Forest	0	22,692	2,189	780	5,812	72	7,187	146	1,878	49,861	0	1,520
Langlade	0	6,645	303	227	2,718	25	1,083	137	2,168	41,051	0	1,297
Lincoln	0	3,558	629	1,588	4,132	1,460	901	257	3,663	46,960	0	3,761
Marinette	0	11,585	1,212	17,491	11,137	543	3,911	121	1,538	88,291	0	143
Menominee	0	0	16,338	2,976	300	38	11	0	526	20,941	0	0
Oconto	0	1,569	705	11,027	10,267	269	393	0	385	23,606	0	62
Oneida	0	20,710	687	6,255	8,920	1,905	4,196	524	2,196	63,489	0	1,416
Shawano	0	108	521	1,272	5,734	113	0	42	329	11,990	0	14
Vilas	0	6,724	787	5,675	4,397	1,698	1,942	18	618	36,447	0	555
Total	0	78,939	24,191	48,460	55,844	6,450	21,467	1,423	13,735	415,255	0	8,860
Northwestern												
Ashland	0	9,713	544	2,442	8,415	812	2,271	335	2,176	42,407	0	216
Barron	0	0	0	77	90	77	0	0	33	1,146	0	5
Bayfield	0	1,233	379	15,398	4,435	1,100	228	54	1,536	84,192	416	2
Burnett	0	22	0	19,209	2,472	20	7	42	40	26,783	0	0
Douglas	0	490	0	37,507	9,527	146	40	0	165	64,260	208	0
Iron	0	1,177	276	289	180	338	118	24	1,419	37,539	0	531
Polk	0	10	0	1,928	0	0	0	0	0	0	0	0
Price	0	4,719	650	1,170	2,323	161	1,393	1,067	5,505	37,793	0	1,182
Rusk	0	12	191	409	575	23	0	96	3,575	35,230	0	2,592
Sawyer	0	4,548	661	3,304	3,554	311	688	659	2,445	75,203	0	946
Taylor	0	2,211	997	812	1,399	0	310	325	2,650	30,810	0	599
Washburn	0	1,151	0	9,416	2,821	647	303	37	604	33,897	0	0
Total	0	25,286	3,698	91,961	35,791	3,635	5,358	2,639	20,148	469,260	624	6,073
Central												
Adams	0	0	0	14,586	21,948	1,329	0	0	52	438	0	0
Chippewa	0	0	149	1,354	878	0	0	121	862	12,669	0	546
Clark	0	0	246	3,083	1,599	29	33	0	708	20,317	0	28
Eau Claire	0	0	0	8,870	3,792	273	8	0	167	2,406	0	14
Jackson	0	0	0	11,741	4,122	339	0	10	150	2,911	0	0
Juneau	0	0	0	12,815	6,218	1,444	0	0	145	1,742	0	0
Marathon	0	461	547	815	3,988	236	356	31	658	21,988	0	49
Marquette	0	0	0	1,370	2,582	102	0	26	0	415	0	0
Monroe	0	0	0	6,830	2,613	200	0	0	146	875	0	0
Portage	0	23	97	4,034	4,411	1,611	11	707	66	4,409	0	24
Waupaca	0	40	4	1,103	5,890	983	9	14	117	3,228	0	21
Waushara	0	0	0	2,004	10,116	1,304	0	0	0	46	0	0
Wood	0	0	0	2,516	1,478	1,637	62	9	370	8,138	0	0
Total	0	524	1,043	71,121	69,635	9,487	479	918	3,441	79,582	0	682
Southwestern												
Buffalo	0	0	0	42	0	0	0	0	0	0	0	0
Crawford	0	0	0	0	0	0	0	0	41	190	0	75
Dunn	0	29	0	3,233	8,120	1,159	11	0	3	75	0	0
Grant	0	0	0	0	0	0	0	0	39	180	0	74
Lacrosse	0	0	0	52	277	0	0	0	3	53	0	0
Pepin	0	0	0	108	111	11	23	0	0	0	0	0
Pierce	0	0	0	0	21	31	0	0	0	11	0	0
Sauk	0	0	0	1,625	3,230	233	0	0	33	0	0	0
Trempealeau	0	0	0	169	1,851	122	0	0	2	0	0	0
Vernon	0	0	0	14	16	28	0	0	0	0	0	0
Total	0	29	0	5,243	13,626	1,584	34	0	121	509	0	149
Southeastern												
Brown	0	0	0	0	488	0	0	0	0	306	0	0
Columbia	0	0	0	285	3,912	122	0	0	130	59	0	0
Door	0	0	0	12	14	0	0	0	0	0	0	0
Green Lake	0	0	0	15	152	33	0	0	0	0	0	0
Kenosha	0	0	0	0	0	0	0	0	0	25	0	0
Kewaunee	0	0	0	0	38	0	0	0	0	0	0	0
Outagamie	0	0	0	19	96	24	0	0	0	153	0	0
Rock	0	0	0	0	0	0	0	0	2	0	0	0
Walworth	0	0	0	0	1,096	11	0	0	0	0	0	0
Waukesha	0	0	0	0	186	0	0	0	0	0	0	0
Total	0	0	0	331	5,982	190	0	0	132	543	0	0
State total	0	104,778	28,932	217,116	180,878	21,346	27,338	4,980	37,577	965,149	624	15,764

(Table 9 continued on next page)

(Table 9 continued)

WISCONSIN

Unit and county[1/]	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hard-woods	All species
Northeastern												
Florence	0	3,166	886	0	1,410	0	3,480	1,288	646	156	53	56,342
Forest	2	9,493	1,861	0	4,986	0	12,631	4,697	1,233	345	609	127,994
Langlade	0	4,449	1,904	0	3,948	71	12,589	3,775	792	64	697	83,943
Lincoln	0	5,664	1,290	0	2,524	0	6,933	4,937	2,024	1	234	90,516
Marinette	25	7,306	248	0	2,264	0	4,729	4,844	3,074	774	141	159,377
Menominee	0	401	494	0	2,748	146	2,439	2,879	678	200	146	51,261
Oconto	0	2,610	52	0	512	0	1,097	864	471	123	29	54,041
Oneida	0	17,590	1,794	0	744	0	7,500	4,709	3,854	208	450	147,147
Shawano	0	435	343	0	2,460	246	2,266	897	827	97	165	27,859
Vilas	0	12,787	960	0	445	0	4,800	1,512	1,706	253	56	81,380
Total	27	63,901	9,832	0	22,041	463	58,464	30,402	15,305	2,221	2580	879,860
Northweastern												
Ashland	3	6,722	2,592	0	5,508	0	7,237	3,821	1,007	94	111	96,426
Barron	0	255	11	0	17	0	77	56	64	14	2	1,924
Bayfield	0	10,046	2,629	0	5,753	0	5,370	2,119	1,133	28	12	136,063
Burnett	0	258	0	0	173	0	408	293	120	41	0	49,888
Douglas	0	3,197	37	0	114	0	266	118	10	2	8	116,095
Iron	0	3,339	1,328	0	2,522	0	3,689	1,641	770	120	49	55,349
Polk	0	0	0	0	0	0	0	0	0	0	0	1,938
Price	0	12,345	3,521	0	17,135	0	12,049	5,917	3,055	645	166	110,796
Rusk	0	6,505	1,429	0	1,154	0	6,219	3,812	3,190	657	163	65,832
Sawyer	0	8,591	1,187	0	894	0	7,700	2,876	1,142	216	269	115,194
Taylor	0	3,608	2,726	0	6,524	0	7,381	3,941	1,064	301	37	65,695
Washburn	0	2,495	141	0	471	0	1,321	860	532	124	32	54,852
Total	3	57,361	15,601	0	40,265	0	51,717	25,454	12,087	2,242	849	870,052
Central												
Adams	0	104	32	0	359	0	157	456	4,738	1,824	0	46,023
Chippewa	0	2,332	802	0	1,046	0	1,405	1,363	1,485	561	26	25,599
Clark	1	2,608	638	0	1,485	0	1,541	996	4,925	2,580	33	40,850
Eau Claire	1	324	53	0	229	0	234	440	1,696	442	36	18,985
Jackson	1	407	47	0	271	0	174	445	4,543	1,428	30	26,619
Juneau	0	521	2	0	372	0	488	550	4,401	2,040	0	30,738
Marathon	0	1,447	995	0	2,907	39	2,336	1,359	3,231	206	30	41,679
Marquette	0	208	0	0	208	0	312	208	972	520	0	6,923
Monroe	0	293	8	0	333	0	433	469	1,136	345	2	13,683
Portage	0	216	24	0	80	0	183	192	1,283	822	6	18,199
Waupaca	0	125	26	0	222	14	275	315	582	157	16	13,141
Waushara	0	0	0	0	0	0	6	6	53	0	0	13,535
Wood	0	400	118	0	335	0	293	351	2,387	800	6	18,900
Total	3	8,985	2,745	0	7,847	53	7,837	7,150	31,432	11,725	185	314,874
Southwestern												
Buffalo	0	0	0	0	0	0	0	0	0	0	0	42
Crawford	0	61	0	14	141	0	71	91	533	202	18	1,437
Dunn	0	4	0	0	11	0	6	0	7	3	2	12,663
Grant	0	61	0	12	139	0	72	83	550	207	18	1,435
Lacrosse	0	3	0	0	8	0	4	7	0	0	2	409
Pepin	0	0	0	0	0	0	0	0	26	0	0	279
Pierce	0	0	0	0	0	0	0	0	0	0	0	63
Sauk	0	63	0	0	99	0	155	155	271	98	2	5,964
Trempealeau	0	14	0	0	8	0	5	5	59	23	2	2,260
Vernon	0	0	0	0	0	0	0	0	0	0	0	58
Total	0	206	0	26	406	0	313	341	1,446	533	44	24,610
Southeastern												
Brown	0	0	0	0	0	0	0	0	0	0	0	794
Columbia	12	208	4	0	175	0	176	113	553	267	46	6,062
Door	0	0	0	0	0	0	0	0	0	0	0	26
Green Lake	0	0	0	0	0	0	0	0	0	0	0	200
Kenosha	0	0	0	0	0	0	0	0	0	0	0	25
Kewaunee	0	0	0	0	0	0	0	0	0	0	0	38
Outagamie	0	0	0	0	0	0	0	0	0	0	0	292
Rock	1	0	0	0	4	0	2	1	0	0	2	12
Walworth	0	0	0	0	0	0	0	0	0	0	0	1,107
Waukesha	0	0	0	0	0	0	0	0	0	0	0	186
Total	13	208	4	0	179	0	178	114	553	267	48	8,742
State total	46	130,661	28,182	26	70,738	516	118,509	63,461	60,823	16,988	3,706	2,098,138

[1/] Includes only those counties that supplied pulpwood in 1981.

Table 10.--Central States pulpwood production by State and destination, 1977-1981.

(In thousand standard cords, unpeeled)

Year	Illinois			Indiana			Iowa			Missouri		
	Total	Destination		Total	Destination		Total	Destination		Total	Destination	
		Central States	Other States		Central States	Other States		Central States	Other States		Central States	Other States
1977	111	53	58	161	66	95	50	46	4	123	44	79
1978	100	49	51	190	81	109	42	40	2	99	42	57
1979	102	52	50	204	89	115	69	56	13	101	42	59
1980	102	45	57	178	69	109	44	39	5	105	38	67
1981	100	43	57	185	68	117	32	26	6	111	44	67

Table 11.--Trends in receipts of roundwood and residue as pulpwood, Central States, 1977-1981

(In thousand standard cords, unpeeled)

Type of material and Area	1977	1978	1979	1980	1981
Roundwood					
Illinois	24	30	33	19	19
Indiana, Iowa, Missouri	62	70	96	75	60
Total	86	100	129	94	79
Residue					
Illinois	62	54	59	28	3
Indiana, Iowa, Missouri	98	95	107	99	112
Total	160	149	166	127	115
All material	246	249	295	221	194

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Discusses 1981 production and receipts and recent production for other years in the Lake and Central States. Shows Michigan, Minnesota, and Wisconsin production by species for each county and compares production by Forest Inventory Unit with that of previous years. Presents 1980 production and receipt data for Illinois, Indiana, Iowa, and Missouri, and shows four production classes by county.

KEY WORDS: Roundwood, residue, receipts, Lake States, Central States.